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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
SINGH, RAMNANDAN P

ART UNIT	PAPER NUMBER
2644	10

DATE MAILED: 05/08/2003

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MAY 13 2003
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
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Please find below and/or attached an Office communication concerning this application or proceeding.

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MAY 14 2003

Date 8/8/2003 **Client:** Intel Corporation
Docket Initials 42390.P12533
Dock. Sup. Initials
Atty Initials EHT WWS WEA ETK
Pat/Ser/Reg 938,699
Description: 1 x

Response due

5/14/2003 Natalie Adair

Office Action Summary	Application No.	Applicant(s)	
	09/938,699	PRABHU ET AL.	
	Examiner	Art Unit	
	Dr. Ramnandan Singh	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-96* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-96* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 January 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings filed on 08 January 2002 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

Claim 1 recites a limitation "**automatic gain control (AGC) to normalize** the power of the tone or voice signal" on page 63, lines 8-9. The normalizing AGC has not been shown. Claim 3 recites a limitation "Goertzel filters compute the energy levels of tone or voice signals at **16 specific frequencies**" on page 63, lines 1-2. The 16 specific frequencies with respect to the Goertzel filters must be shown. A similar thing holds for claim 4. Further, claim 27 recites a limitation "**utilizing an elliptical Infinite Impulse Response (IIR) Filter**" on page 67, lines 10-11. The elliptical Infinite Impulse Response (IIR) Filter has not been shown. Therefore, the normalizing AGC, the 16 specific frequencies, the four signal processing units,... etc. must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3-5, 14, 16-18, 59, 61-63, 72, 74-75, 84, 86-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartkowiak et al [US 5,809,133] in view of Quiros [US 5,604,771].

Regarding claims 1, 14, 59, 72, 84, Bartkowiak et al teaches a method and a Device for detecting multi-frequency tones in a telephone system; wherein tone detector 102 comprising codec 104, and DSP 106. The DSP 106 and codec 104 are comprised on a **single semiconductor silicon chip** [col. 6, lines 32-41]. The detector 102 further includes a **memory** 108, **computer readable media** , comprising a RAM (random access memory) and a ROM (read-only memory), coupled to the DSP which is used by the DSP 106 for storage and retrieval of data. The program (i.e. executable instructions) is stored in the ROM before loading into RAM [col. 6, line 53 to col. 7, line 10]. The DSP 106 receives the digital samples and applies the Goertzel filters to determine the energy of a tone or voice signals at specific frequencies [Figs. 1-12; col. Col. 6, lines 32-52]. The received signals may include DTMF of MTMF tone signals, one or more speech signals and/or noise [col. 3, lines 26-36]. Fig. 2 provides a flowchart

diagram to detect tone signals [col. 7, line 11 to col. 8, line 12]. Further, Bartkowiak et al teaches **multiplying** the respective A(n) value of A(1) – A(16) with a **respective gain**. These multipliers correspond to the **gain adjustment** in step 126 of Fig. 2 [col. 9, lines 10-15]. The DSP 106 performs the gain adjustment as shown in Fig. 3.

Bartkowiak et al does not teach expressly perform automatic gain control(AGC) to normalize the power of tone or voice signal.

Quiros teaches using a dula tone detector block 601 using a Goertzel's algorithm [col. 19, lines 37-63]. Further, Quiro applies the AGC to normalize the signal as shown in Fig. 7 [col. 20, lines 10-31; col. 24, lines 21-62]

Bartkowiak et al and Quirosl are analogous art because they are from a similar problem solving area, viz. , tone detection in telecommunications using a Goertzel's algorithm.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the normalizing gain factor N of Quiros to the Bartkowiak's Goertzel filter as a multiplier shown in Fig. 3.

The suggestion/motivation for doing so would have been to reduce disproportionate variations in the amplitudes of tone signals due to various arithmetic operations performed in computation [Quiros; col. 20, lines 10-23].

Regarding claims 3, 16, 61, 74, 86, Bartkowiak et al teaches applying Goertzel filters, GDFT (1)...GDFT(16), to compute the energy levels of tone or voice signals at 16 specific frequencies as shown in Fig. 3.

Regarding claims 4, 17, 62, 87, Bartkowiak et al teaches applying four signal processing units to execute Goertzel filters as shown in Fig. 7.

Regarding claims 5, 18, 63, 75, 88, Bartkowiak et al teaches applying Goertzel filters to determine maximum values of the energy levels for each of two or more frequency groups [col. 4, lines 10-21; col. 7, lines 33-50].

5. Claims 6, 19, 64, 76, 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bartkowiak et al and Quiros as applied to claims 1, 5, 14, 18, 59, 63, 72, 84, 88 above, and further in view of Johanson [US 6,381,330 B1].

Regarding claims 6, 19, 64, 76, 89, the combination of Bartkowiak et al and

Quiros does not teach expressly discriminating whether the tone is a single tone, a dual tone, silence, or another type of tone.

Johanson teaches a tone detection method for detecting whether the tone is a single tone, a dual tone, silence (or a lack of a signal response), or another type of tone in a signal Fig. 4; col. 1, lines 44-62; col. 7, line 45 to col. 8, line 24].

Bartkowiak et al, Quiros and Johanson are analogous art because they are from a similar problem solving area, viz. , tone detection in telephonic communications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the tone detection technique of Johanson with the Bartkowiak et al and Quiros system.

The suggestion/motivation for doing so would have been to detect alerting CPE tones or other tones relating to the reception of call without the need for annoying muting intervals [Johanson; col. 2, lines 62-67].

6. Claims 2, 6-7, 15, 19-20, 60, 64-65, 73, 76-77, 85, 89-90, are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bartkowiak et al and Quiros as applied to claims 1, 5, 14, 18, 59, 63, 72, 84, 88 above, and further in view of Hardy et al [US 5,448,624].

Regarding claims 2, 6, 15, 19, 60, 64, 73, 76, 85, 89, the combination of Bartkowiak et al and Quiros does not teach expressly determining whether the tone is one of a dial tone, a busy tone, a fast busy tone, a ringing tone, or a fax tone.

Hardy et al teaches call progress tone detector 54 to determine whether the tone is one of a dial tone, a busy tone, a fast busy tone, a ringing tone, or a fax tone [col. 6, lines 29-48; col. 10, lines 6-11; col. 10, lines 23-36; col. 11, line 55 to col. 12, line 11; col. 22, lines 14-26; col. 28, lines 52-63; col. 35, lines 64-66; col. 36, lines 46-48]. , Hardy et al also discloses a silence detection type representing a lack of a signal response [col. 21, lines 29-53], a DTMF tones or any other type of tones received from phone lines [col. 6, lines 21-29].

Bartkowiak et al, Quiros and Hardy et al are analogous art because they are from a similar problem solving area, viz. , tone detection in telephonic communications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the tone detection capability for various tones of Hardy et al with the Bartkowiak et al and Quiros system.

The suggestion/motivation for doing so would have been to provide call progress evaluation of a telephone network [Hardy et al; col. 1, lines 10-17; col. 2, lines 33-37].

Regarding claims 7, 20, 65, 77, 90, Hardy et al teaches a computer controlled system interfaced with the telephone network that allows a user to define various tone signal profiles in a DETECT.DAT signature block, and thereby identifying virtually **any type of telephone exchange response signals**. This signature block works as a user defined dictionary of tones to determine a tone by identifying the tone in the dictionary [col. 16, lines 42-63; col. 18, lines 19-39; col. 28, lines 52-63].

7. Claims 8-13, 21-26, 66-71, 78-83, 91-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bartkowiak et al, Quiros and Hardy et al as applied to claims 7, 20, 64, 76, 90 above, and further in view of Basehore [US 4,570,360].

Regarding claims 8-11, 21-24, 66-69, 78-81, 91-94, the combination of Bartkowiak et al, Quiros and Hardy et al does not teach expressly updating a state to "tone state" (i.e. tone on) using a state counter and ON/OFF cadence values.

Basehore teaches identifying three general states, including (a) an update state, (b) a cadence state, and (c) a tone generation state [col. 7, lines 17-30]. Further, Basehore applies a state counter 53 to identify a third state, a "tone state" [col. 8, lines 28-48] and uses an on/off cadence for transmission of tones with a counter 70 [Figs. 3A-3D; col. 2, line 49 to col. 3, lines 3; col. 5, line 58 to col. 6, line 8; col. 9, lines 30-44].

Bartkowiak et al, Quiros, Hardy et al and Basehore are analogous art because they are from a similar problem solving area, viz. , tone detection in telephonic communications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the tone generation and transmission system for digital tone words of Basehore with the Bartkowiak et al, Quiros system, and Hardy et al.

The suggestion/motivation for doing so would have been to provide a capability to iteratively generate digital tone words of a multiplicity of frequencies in a number of different cadences and to transmit them in defined sequential time slots for use by a telephone switching system [col. 1, lines 20-25].

Regarding claims 12-13, 25-26, 70-71, 82-83, 95-96, Hardy et al teaches using a silence detection type and the DETECT.DOT signature blocks with seven cadences [col. 21, lines 29-55; col. 22, lines 34-42; col. 28, lines 16-51; col. 33, lines 10-33].

8. Claims 27, 29-35 and 43, 45-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartkowiak et al [US 5,809,133] in view of Quiros [US 5,604,771], and further, in view of Tulai [US 5,563,942], and further, in view of Scott et al [US 6,212,374 B1].

Regarding claims 27 and 43, Bartkowiak et al teaches a method and a device for detecting multi-frequency tones in a telephone system; wherein tone detector 102 comprising codec 104, and DSP 106. The DSP 106 and codec 104 are comprised on a **single semiconductor silicon chip** [col. 6, lines 32-41]. The detector 102 further includes a **memory** 108, **computer readable media** , comprising a RAM (random access memory) and a ROM (read-only memory), coupled to the DSP which is used by the DSP 106 for storage and retrieval of data. The program (i.e. executable instructions) is stored in the ROM before loading into RAM [col. 6, line 53 to col. 7, line 10]. The DSP 106 receives the digital samples and applies the Goertzel filters to determine the energy of a tone or voice signals at specific frequencies [Figs. 1-12; col. Col. 6, lines 32-52]. The received signals may include DTMF of MTMF tone signals, one or more speech signals and/or noise [col. 3, lines 26-36]. Fig. 2 provides a flowchart diagram to detect tone signals [col. 7, line 11 to col. 8, line 12]. Further, Bartkowiak et al teaches **multiplying** the respective A(n) value of A(1) – A(16) with a **respective gain**. These multipliers correspond to the **gain adjustment** in step 126 of Fig. 2 [col. 9, lines 10-15]. The DSP 106 performs the gain adjustment as shown in Fig. 3.

Bartkowiak et al does not teach expressly perform automatic gain control(AGC) to normalize the power of tone or voice signal; utilizing an elliptical IIR filter; and detecting whether the tone is a modem tone or echo disabling tone.

Quiros teaches using a dula tone detector block 601 using a Goertzel's algorithm [col. 19, lines 37-63]. Further, Quiro applies the AGC to normalize the signal as shown in Fig. 7 [col. 20, lines 10-31; col. 24, lines 21-62].

Tulai teaches digital call progress tone detection utilizing an elliptical IIR filter [col. 5, lines 1-5].

Scott et al teaches disabling of echo cancellers when initiating a telephone call via modem 100 [col. 5, lines 54-64].

Bartkowiak et al, Quiros, Tulai and Scott et al are analogous art because they are from a similar problem solving area, viz. , tone detection in telecommunications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the normalizing gain factor N of Quiros to the Bartkowiak's Goertzel filter as a multiplier shown in Fig. 3; the elliptical IIR filter of Tulai as a low pass filter; and the echo canceler disabling signal of Scott et al after call startup.

The suggestion/motivation for applying the normalizing gain factor N would have been to reduce disproportionate variations in the amplitudes of tone signals due to various arithmetic operations performed in computation [Quiros; col. 20, lines 10-23]; utilizing the elliptical IIR filter for distinguishing call progress tones from other signals

such as speech [Tulai; col. 1, lines 9-11]; and applying the echo canceller disabling signal to prevent adverse disruption of digital data communications over cellular networks [Scott et al; col. 1, lines 17-20].

Regarding claims 29 and 45, Bartkowiak et al teaches using the four signal processing units shown in Fig. 7 that can also execute the elliptical IIR filter simultaneously .

Regarding claims 30-35 and 46-51, Scott et al teaches an echo canceller disabling system to deactivate the voice echo cancellers , wherein the echo canceller disabling system is configured to transmit a tone at approximately 2100Hz with 180 degree phase reversals to disable one or more echo cancellers brought on-line after the call startup using modem 100 [Abstract; Figs. 3-4; col. 5, lines 54-64; col. 6, lines 22-62].

9. Claims 28 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bartkowiak et al, Quiros, Tulai and Scott et al as applied to claims 27 and 43 above, and further in view of Hardy et al [US 5,448,624].

Regarding claims 28 and 44, the combination of Bartkowiak et al, Quiros, Tulai and Scott et al does not teach expressly determining whether the tone is one of a dial tone, a busy tone, a fast busy tone, a ringing tone, or a fax tone.

Hardy et al teaches call progress tone detector 54 to determine whether the tone is one of a dial tone, a busy tone, a fast busy tone, a ringing tone, or a fax tone [col. 6, lines 29-48; col. 10, lines 6-11; col. 10, lines 23-36; col. 11, line 55 to col. 12, line 11; col. 22, lines 14-26; col. 28, lines 52-63; col. 35, lines 64-66; col. 36, lines 46-48]. , Hardy et al also discloses a silence detection type representing a lack of a signal response [col. 21, lines 29-53], a DTMF tones or any other type of tones received from phone lines [col. 6, lines 21-29].

Bartkowiak et al, Quiros, Tulai and Scott et al and Hardy et al are analogous art because they are from a similar problem solving area, viz. , tone detection in telephonic communications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the tone detection capability for various tones of Hardy et al with the Bartkowiak et al, Quiros, Tulai and Scott et al system.

The suggestion/motivation for doing so would have been to provide call progress evaluation of a telephone network [Hardy et al; col. 1, lines 10-17; col. 2, lines 33-37].

10. Claims 36-41 and 52-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bartkowiak et al, Quiros, Tulai and Scott et al as

applied to claims 27, 32, 43, and 48 above, and further in view of Gilbert [US 6,172,985 B1].

Regarding claims 36-41 and 52-57, the combination of Bartkowiak et al, Quiros, Tulai and Scott et al teaches a low pass filter selectes from a bank of 10 IIR elliptical filters [Tulai; col. 5, lines 1-5]. However, the combination of Bartkowiak et al, Quiros, Tulai and Scott et al does not teach expressly distinguishing Fax V.21 tone from other tones.

Gilbert reaches performing fax sessions using a digital signal processor in conjunction with a data access arrangement (DAA) equipped with an AT & T Fax High-Speed data pump chip set. The data pump chip set conforms to the telecommunications in CCITT recommendations V.32bis, V.32, V.22bis, V.22, V.23, **V.21** [col. 5, line 59 to col. 6, line 11]. Further, Gilbert discloses using POTS DAA circuit 30 and DSP 42 in its POTS mode that performs functionality such as modulation and demodulation [col. 5, lines 41-58; col. 5, lines 5-40].

Bartkowiak et al, Quiros, Tulai and Scott et al and Gilbert are analogous art because they are from a similar problem solving area, viz. , tone detection in telephonic communications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the tone detection capability for various tones including fax V.21tone of Gilbert with the Bartkowiak et al, Quiros, Tulai and Scott et al system.

The suggestion/motivation for doing so would have been to provide remote communications including fax service in conjunction with the use of computers [Gilbert; col. 1, lines 11-17; col. 2, lines 4-11].

11. Claims 42 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bartkowiak et al, Quiros, Tulai, Scott et al and Gilbert as applied to claims 27, 41, 43, and 57 above, and further in view of Lee et al [US 6,023,470].

Regarding claims 42 and 48, the combination of Bartkowiak et al, Quiros, Tulai, Scott et al and Gilbert does not teach expressly using a fax message three consecutive times to confirm a Fax V.21 tone.

Lee et al teaches conducting a fax session using a Fax Signal Register (FSR) that maintains a counter to reflect the number of times a control message a control message has been sequentially transmitted. This information is used by the FSR to enforce the "tree strikes you're out" T.30 retransmission limit on the T30E [col. 54, lines

19-29; col. 57, lines 34-39; col. 45, line 27 to col. 46, line 51; col. 6, lines 12-33; col. 9, lines 1-10].

Bartkowiak et al, Quiros, Tulai and Scott et al, Gilbert and Lee et al are analogous art because they are from a similar problem solving area, viz. , tone detection in telephonic communications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the Fax Signal Register (FSR) with a **counter** of Lee et al with the Bartkowiak et al, Quiros, Tulai, Scott et al and Gilbert system.

The suggestion/motivation for doing so would have been to enforce the "three strikes you're out" T.30 **retransmission limit requirement** on the T30E [Lee et al; col. 54, lines 19-29].

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Ramnandan Singh whose telephone number is (703)308-6270. The examiner can normally be reached on M-F(8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester Isen can be reached on (703)-305-4386. The fax phone numbers

for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-0377.

Dr. Ramnandan Singh
Examiner
Art Unit 2644

April 28, 2003

FORESTER W. ISEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Form PTO 948 (Rev. 03/01) U.S. DEPARTMENT OF COMMERCE - Patent and Trademark Office Application No. 09/938,664

NOTICE OF DRAFTSPERSON'S PATENT DRAWING REVIEW

The drawing(s) filed (insert date) 11/8/02 are:

A. ☐ approved by the Draftsperson under 37 CFR 1.84 or 1.152.

B. ☒ objected to by the Draftsperson under 37 CFR 1.84 or 1.152 for the reasons indicated below. The Examiner will require submission of new, corrected drawings when necessary. Corrected drawing must be sumitted according to the instructions on the back of this notice.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings: Black ink. Color.
   - ___ Color drawings are not acceptable until petiton is granted. Fig(s) _____
   - ___ Pencil and non black ink not permitted. Fig(s) _____
2. PHOTOGRAPHS. 37 CFR 1.84(b)
   - ___ 1 full-tone set is required. Fig(s) _____
   - ___ Photographs may not be mounted. 37 CFR 1.84(c)
   - ___ Poor quality (half-tone). Fig(s) _____
3. TYPE OF PAPER. 37 CFR 1.84(c)
   - ___ Paper not flexible, strong, white, and durable. Fig(s) _____
   - ___ Erasures, alterations, overwritings, interlineations, folds, copy machine marks not accepted. Fig(s) _____
   - ___ Mylar, velum paper is not acceptable (too thin). Fig(s) _____
4. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes:
   - ___ 21.0 cm by 29.7 cm (DIN size A4)
   - ___ 21.6 cm by 27.9 cm (8 1/2 x 11 inches)
   - ___ All drawing sheets not the same size. Sheet(s) _____
   - ___ Drawings sheets not an acceptable size. Fig(s) _____
5. MARGINS. 37 CFR 1.84(g): Acceptable margins:

   Top 2.5 cm Left 2.5cm Right 1.5 cm Bottom 1.0 cm SIZE: A4 Size

   Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm SIZE: 8 1/2 x 11

   Margins not acceptable. Fig(s) _____

   _____ Top (T) _____ Left (L)

   _____ Right (R) _____ Bottom (B)
6. VIEWS. 37 CFR 1.84(h)

   REMINDER: Specification may require revision to correspond to drawing changes.

   Partial views. 37 CFR 1.84(h)(2)
   - ___ Brackets needed to show figure as one entity. Fig(s) _____
   - ___ Views not labeled separately or properly. Fig(s) _____
   - ___ Enlarged view not labeled separetely or properly. Fig(s) _____
7. SECTIONAL VIEWS. 37 CFR 1.84 (h)(3)
   - ___ Hatching not indicated for sectional portions of an object. Fig(s) _____
   - ___ Sectional designation should be noted with Arabic or Roman numbers. Fig(s) _____
8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)
   - ___ Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned so that the top becomes the right side, except for graphs. Fig(s) _____
9. SCALE. 37 CFR 1.84(k)
   - ___ Scale not large enough to show mechanism without crowding when drawing is reduced in size to two-thirds in reproduction. Fig(s) _____
10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(i)
    - ☒ Lines, numbers & letters not uniformly thick and well defined, clean, durable, and black (poor line quality). Fig(s) 1 thru 18
11. SHADING. 37 CFR 1.84(m)
    - ___ Solid black areas pale. Fig(s) _____
    - ___ Solid black shading not permitted. Fig(s) _____
    - ___ Shade lines, pale, rough and blurred. Fig(s) _____
12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.84(p)
    - ___ Numbers and reference characters not plain and legible. Fig(s) _____
    - ___ Figure legends are poor. Fig(s) _____
    - ___ Numbers and reference characters not oriented in the same direction as the view. 37 CFR 1.84(p)(1) Fig(s) _____
    - ___ English alphabet not used. 37 CFR 1.84(p)(2) Figs _____
    - ___ Numbers, letters and reference characters must be at least .32 cm (1/8 inch) in height. 37 CFR 1.84(p)(3) Fig(s) _____
13. LEAD LINES. 37 CFR 1.84(q)
    - ___ Lead lines cross each other. Fig(s) _____
    - ___ Lead lines missing. Fig(s) _____
14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.84(t)
    - ___ Sheets not numbered consecutively, and in Arabic numerals beginning with number 1. Sheet(s) _____
15. NUMBERING OF VIEWS. 37 CFR 1.84(u)
    - ___ Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig(s) _____
16. CORRECTIONS. 37 CFR 1.84(w)
    - ___ Corrections not made from prior PTO-948 dated _____
17. DESIGN DRAWINGS. 37 CFR 1.152
    - ___ Surface shading shown not appropriate. Fig(s) _____
    - ___ Solid black shading not used for color contrast. Fig(s) _____

COMMENTS

REVIEWER A. D DATE 4/24/03 TELEPHONE NO. _____

ATTACHMENT TO PAPER NO. _____

Attachment for PTO-948 (Rev. 03/01, or earlier)
6/18/01

The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes incorporated therein Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability. Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes

Timing of Corrections

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication. See 37 CFR 1.85(a).

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application

Notice of References Cited	Application/Control No. 09/938,699	Applicant(s)/Patent Under Reexamination PRABHU ET AL.	
	Examiner Dr. Ramnandan Singh	Art Unit 2644	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5809133-A	09-1998	Bartkowiak et al	379
	B	US-5563942-A	10-1996	Tulai	379
	C	US-6212374-B1	04-2001	Scott et al	455
	D	US-6172985-B1	01-2001	Gilbert	370
	E	US-6023470-A	02-2000	Lee et al	370
	F	US-6381330-B1	04-2002	Johanson	379
	G	US-5604771-A	02-1997	Quiros	375
	H	US-4570260-A	02-1986	Basehore	370
	I	US-5448624-A	09-1995	Hardy et al	379
	J	US-			
	K	US-			
	L	US-			
	M	US-			

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	S					
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*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet	2		2

Complete if Known	
Application Number	09/938,699
Filing Date	08/23/2001
First Named Inventor:	Raghavendra S. Prabhu
Group Art Unit	2643
Examiner Name	Unassigned
Attorney Docket Number	042390.P12533

OTHER ART – NO PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		S. VARADA AND R. SANKAR, Hardware Strategies for End-Point Detection, Department of Electrical Eng. University of South Florida, Tampa, FL 33620, Published 07-03-95.	

not received

Examiner Signature	Ram Singh	Date Considered	4/24/03

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 2

Complete if Known	
Application Number	09/938,699
Filing Date	August 23, 2001
First Named Inventor	Raghavendra S. Prabhu
Group Art Unit	2643
Examiner Name	Unassigned
Attorney Docket Number	42390P12533

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	U.S. Patent Document Number	Kind Code[2] (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Office[3]	Number[4]	Kind Code[5] (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
RS		WO	00/17856		Conexant Systems, Inc.	03-30-2000		
RS		EP	0 734 012	A2	Mitsubishi	09-25-1996		
RS		EP	0 384 490	A2	NEC Corporation	08-29-1990		
RS		EP	0 576 980	A2	Telefonaktiebolaget	01-05-1994		

Examiner Signature	Ram Singh	Date Considered	4/24/03

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Attorney Docket Number	42390P12533

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RS		M. FELDER, J. MASON & B. EVANS; Effieicent Dual-tone Multifrequency Detection Using the Nonuniform Discrete Fourier Transform, IEEE Signal Processing Letters, 7/1998	
		MINOLI & MINOLI; Chapter 5, Technology and Standards for Low-Bit-Rate Vocoding Methods; Delivering Voice Over IP Networks; 1998; pgs. 149-233; Robert Ipsen Pub.	
		Texas Instruments, SMJ320C80 Digital Signal Processor Data Sheet; document No. SGUS025; August 1998; Texas Instruments	
		W. STALLINGS, Computer Organization and Architecture 4th Edition, pgs. 313-386, Prentice-Hall, Inc. New Jersey, 1993	
		R. FROMM, Instruction Set Architecture Simulation Infrastructure ... Development, www.ilpsoft.eecs.berkely.edu:9636/~9636/~ilpsoft/99abstracts/rfromm.1.html, 10/15/99	
		Instructions Set Architecture, Web based course, www.-ee.eng.hawaii.edu/~tep/EE461/Notes/ISA/isa.html, 10/15/99	
		J. McCORMICK, Supporting Predicated Execution: Techniques and Tradeoffs, www.crhc.uiuc.edu/IMPACT/abstracts/report/ms-thesis-jim-mccormick.html, 10/15/99	
RS		R65C00/21 Dual CMOS Microcomputer and R65C29 Dual CMOS Microprocessor; Rockwell 1984 Data Book; Rockwell International; Doc. No. 29651N64; pgs. 3-1 - 3-33.	
RS		D. PATTERSON & J. HENNESSY, Computer Architecture A Quantitative Approach, Morgan Kaufmann Publishers, Inc., San Mateo, Ca 1990, pgs 142-143.	
RS		J. MICK & J. BRICK, Bit-Slice Microprocessor Design, McGraw-Hill Book Company, 1990, pg. 191	
RS		R. KAIN, Advanced Computer Architecture, A Systems Design Approach, Department of Electrical Engineering, University of Minnesota, Prentice Hall, NJ, pgs. 16-17.	
RS		J. CAVANAGH, Digital Computer Arithmetic, Design and Implementation, McGraw-Hill Book Company, 1994, pgs. 1-12.	
RS		TEXAS INSTRUMENTS, DTMF Tone Generation and Detection An Implementation Using the TMS320C54x Application Report, SPRA096, June 1997	

Examiner Signature	Ram Singh	Date Considered	4/24/03

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Sheet 1 of 2

Complete if Known	
Application Number	09/938,699
Filing Date	August 23, 2001
First Named Inventor	Raghavendra S. Prabhu
Group Art Unit	2643
Examiner Name	Unassigned
Attorney Docket Number	42390P12533

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	U.S. Patent Document Number	Kind Code[2] (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
RS		5,325,425		Novas, et al.	06-28-1994	

FOREIGN PATENT DOCUMENTS

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RS		WO	99/29085		Northern Telecom Limited	06-10-1999		

Examiner Signature	Ram Pal	Date Considered	4/24/03

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First Named Inventor	Raghavendra S. Prabhu
Group Art Unit	2643
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Attorney Docket Number	42390P12533

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RS		TEXAS INSTRUMENTS, DTMF Tone Generation and Detection An Implementation Using the TMS320C54X, SPEA096, June 1997	

Examiner Signature	Ram Singh	Date Considered	4/24/03

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RS		5,598,466		Graumann	01/28/1997	

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RS		WO	00	17856	PCT	03-30-2000		
RS		EP	0 734	012 A2	European Patent Application	09-25-1996		

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RS		Texas Instruments, Application Report SPRA482, Programmable Double Biquad Filter for Tone Detection on Fixed Point DSPs, February 1999, pgs. 1-25.	

Examiner Signature	Ram Singh	Date Considered	4/24/03

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